170621

FLOOD INSURANCE STUDY

VILLAGE OF CASEYVILLE,
ILLINOIS
ST. CLAIR COUNTY

SEPTEMBER 16, 1980

federal emergency management agency
federal insurance administration

COMMUNITY NUMBER -170621

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PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
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1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the Village of Caseyville, St. Clair County, Illinois, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert Caseyville to the regular program of flood insurance by the Federal Insurance Administration. Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

At the request of the Consultation Coordination Officer appointed by the Federal Insurance Administrator, the first community meeting was held on March 31, 1975. This meeting, attended by representatives of the Village of Caseyville and the study contractor, was held to explain the nature and purpose of this Flood Insurance Study. The limits of detailed and approximate study were first determined during this meeting. The limits were revised after field reconnaissance and consultation with the community and the Federal Insurance Administration.

The Illinois Department of Transportation served as the State Coordinating Agency for this study.

During the course of this study, contacts were made with the U.S. Soil Conservation Service, the Federal Highway Administration, the Illinois State Water Survey, the Illinois Division of Water Resources, the U.S. Geological Survey, and the Village of Caseyville in order to obtain general community information.

On February 2, 1979, the results of the hydrologic and hydraulic analyses were reviewed at an intermediate community coordination meeting attended by representatives from the Village of Caseyville, the Southwestern Illinois Planning Commission, the State of Illinois, the Federal Insurance Administration, and the study contractor.

The results of this study were reviewed at a final community coordination meeting held on May 1, 1980. Attending the meeting were representatives of the Federal Insurance Administration, the study contractor, the Southwestern Illinois Planning Commission, and the village. No problems were raised at the meeting.

1.3 Authority and Acknowledgments

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers, St. Louis District for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-7-76, Project Order No. 7. This work, which was completed in June 1979, covered all significant flooding sources affecting the Village of Caseyville.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated areas of the Village of Caseyville, St. Clair County, Illinois. The area of study is shown on the Vicinity Map (Figure 1).

Unincorporated areas of St. Clair County were not included in this study.

Although Caseyville exercises extraterritorial jurisdiction, those areas involved are not documented in this study.

Little Canteen Creek and Canteen Creek were studied in detail.

Since virtually all of Caseyville is developed, the entire incorporated area was analyzed by detailed methods to determine shallow flooding conditions. The overflow and ponding from Harding Ditch was also considered in the shallow flooding analysis.

Those areas studied by detailed methods were chosen with consideration given to all proposed construction and forecasted development through 1984.

2.2 Community Description

The Village of Caseyville is in north-central St. Clair County, in southwestern Illinois. It is approximately 7 miles east of the Mississippi River at river mile 181 above the mouth of the Ohio River. The village covers an area of approximately 9.6 square miles.

Caseyville is bounded by the City of Collinsville and Madison County to the north, the Villages of Fairmont City and Washington Park to the west, unincorporated St. Clair County land to the south, and the City of O'Fallon to the east.

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

VILLAGE OF CASEYVILLE, IL
(ST. CLAIR CO.)

APPROXIMATE SCALE
2000 0 2000 4000 6000 FEET

VICINITY MAP

Major transportation routes through the village include Interstate Highway 64, State Highway 157, the Chessie System, and Conrail.

Caseyville was incorporated in 1849 as a village. It is primarily residential with some old and new commercial development. Since 1950, the village has had the greatest growth in its history. From 1950 to 1970, the population more than doubled, reaching a figure of 3411. By 1975, the population was 4242. Further growth is expected and the population is expected to be approximately 4970 by 1990 (Reference 1).

Both Little Canteen Creek and Canteen Creek have agricultural, residential, and light commerical flood plain development.

The topography of the Caseyville area can be separated into the flatlands of the American Bottoms and the rolling hills of the upland region. The topography of the American Bottoms has been shaped by the succession of former channels of the Mississippi River which include Cahokia Lake, Horeshoe Lake, and other oxbow lakes. Associated with these lakes are a series of higher sandbars and shorelines, and lower areas consisting of former drainageways, creeks, and sloughs. The topographic and soil patterns show a definite correlation to the cutting and filling of former river channels. The upland consists of highly dissected drift plain in which a series of streams flow a short distance to the Mississippi River alluvial valley. The streams have an average gradient of 30 to 40 feet per mile. The stream valleys are a reflection of the pre-Pleistocene topography. The valleys were probably only partially filled with drift or were reexcavated by post-Illinoian streams. Most of the streams have eroded to bedrock somewhere along the valleys.

Most of the ground elevations within Caseyville range from 410 to 425 feet. There are areas in the eastern part of the village as high as 470 feet.

Little Canteen Creek flows from the southeastern corporate limits for approximately 3 miles northwesterly to the Chessie System crossing near the northern corporate limits. Harding Ditch flows from this point to the western corporate limits of Caseyville. The northeastern section of Caseyville is primarily drained by Canteen Creek as it flows from the northeastern corporate limits to the northern corporate limits.

The soils of the area are highly varied. On the upland sector, the parent material for the soils is deep loess which is conditioned by highly variable slopes and vegetation (prairie grasses and oak-hickory). In the American Bottoms portion of the study area, one of the most important physical parameters is the alluvial soil. These soil materials are highly varied spatially but are moderately uniform in particle size. Since the close of the Wisconsin

glacial stage, the Mississippi River in this area has been a major transporter of silt and sand-sized particles. It is a fast-flowing river that rarely deposits clays; source materials for the suspended load and bed load of the river are primarily loess (silt sized) and tills (silt and sands) of the Mississippi and Missouri River basins. The silty clays that do exist in the American Bottoms tend to be plastics, have low permeability, and high shrink-swell potential.

Most of the region is underlain by Pennsylvania bedrock that is primarily weak shale and easily eroded. Thin limestones (generally less than 25 feet thick) and locally developed sandstones may also be found, and these strata are usually more resistant to erosion.

Mississippian limestone forms the bedrock surface in the extreme western portion of the county. Limestone sinks are visible in some regions and have been formed by the erosion of glacial deposits through small fissures in the limestone. In some instances, the underlying limestone has become sealed, and the craters have filled with water.

The average annual temperature of the region is 56°F. January has a mean temperature of 32°F,and July has a mean temperature of 79°F. Severe outbreaks of cold polar air move through the region every winter and produce minimum temperatures as low as -10°F to -15°F. July and August are hot and very often humid. Temperatures will exceed 100°F for short periods of 3 to 5 days. The average annual precipitation in the area is approximately 38 inches. June is normally the wettest month and has an average of 4 to 5 inches of rain. Snow may occur from early November through April. On the average, approximately 17 inches of snow can be expected each year (Reference 2).

2.3 Principal Flood Problems

Flooding occurs as a result of local runoff and ponding caused by intense rainfall.

The areas most frequently flooded are the low-lying grounds which are traces of former sloughs. Water collects in these low places during storm ruoff periods. Verly little development has occurred in the lowest parts of these former sloughs; consequently, small rainfall amounts cause little damage. However, during severe storm periods, these low areas do not have sufficient capacity to store all of the runoff. As a result, inundation and damage occur in the surrounding areas.

Low elevations within Caseyville made it susceptible to early Mississippi River overflows, particulary the 1844 and 1851 floods. After authorization in 1936, the existing levee was raised to

provide more protection to the East Side area (East St. Louis and vicinity), including Caseyville. Since that time, the village has not experienced direct flooding from the Mississippi River.

Some of the larger flood events are briefly discussed below:

August 1946 Flood. A storm centered a few miles north of the Blue Waters Ditch basin resulted in the largest recorded rainfall to that date. The Blue Waters Ditch area is that portion of the American Bottoms extending from State Highway 15 on the north to the southern corporate limits of the Village of Cahokia on the south. The storm began at approximately 2:00 a.m. on August 13 in the Caseyville area and ended at 9:00 a.m. on August 16.

An average of 15.0 inches of rain fell in the vicinity of Caseyville during the storm. Up to 19.5 inches of rainfall were recorded just south of the area during the storm. The recurrence interval for this flood is approximately 100 years.

June 1957 Flood. A storm centered southwest of Caseyville in the Centerville, Illinois, area began at 12:00 noon on June 14 and ended at 10:00 a.m. on June 15, and approximately 9 inches of rainfall accumulated in the Caseyville region. Flooding was extensive through-out the American Bottoms area. Seven deaths were attributed to the flood in the American Bottoms, and damage in the low areas was extensive. The recurrence interval for this flood is greater than 100 years.

May 1961 Flood. A storm which began at approximately 1:00 a.m. on May 5 and ended at 12:00 midnight on May 8 was part of the generalized storm through-out Missouri and Illinois. More than 9 inches of rainfall occurred over the area. Damage was extensive in low-lying areas. This major flood affecting Caseyville has a recurrence interval of approximately 50 years.

2.4 Flood Protection Measures

The East St. Louis and Vicinity, Illinois, flood control project provides Caseyville with Mississippi River urban design flood protection. Protection is provided, primarily by levee, to all bottomlands between the bluffs on the east and the Missippi River and Chain of Rocks Canal on the west. This levee protection also extends from the Prairie du Pont Canal on the south side of Cahokia

Creek diversion channel on the north. The project included raising and enlarging 16.7 miles of levee and construction of 3.1 miles of floodwall, gravity drainage structures, and alterations at bridge crossings (Reference 3).

Within Caseyville, a levee along Harding Ditch contains lower frequency floods but provides no significant protection against the 100-year event.

There are no other flood control structures in the village, and no flood plain management is in effect.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual occurrence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each stream studied in detail in the community.

Since there are no streamflow records for Harding Ditch or Little Canteen Creek and only 7 years of record for a tributary of Little Canteen Creek, peak discharges for floods of 10-, 50-, and 100-year recurrence intervals were developed by hydrologic basin modeling, using the computer program HEC-1 Flood Hydrograph Package (Reference 4). The computer program uses rainfall frequency amounts obtained from U.S. National Weather Service Technical Paper No. 40, optimized unit hydrographs, and storage routing (Reference 5).

Discharges for the 500-year floods for Harding Ditch and Little Canteen Creek were obtained with rainfall data extrapolated from that published in U.S. National Weather Service Technical Paper No. 40 (Reference 5).

Two analyses were performed in order to obtain frequency curves for Canteen Creek. Results were compared and adjusted. First, a frequency curve was derived from a log-Pearson Type III statistical analysis (Reference 6) for approximately 37 years of record (1939 to 1976) for the U.S. Geological Survey gage on Canteen Creek near Caseyville (Reference 7). Secondly, regionally optimized unit graph and loss rate parameters were used in a Canteen Creek basin HEC-1 model (Reference 4) and rainfall frequency amounts were obtained from U.S. National Weather Service Technical Paper No. 40 (Reference 5). The 500-year flood discharges were obtained with rainfall data extrapolated from that published in Technical Paper No. 40 (Reference 5). The frequency curve derived from the HEC-1 model was then adjusted to closely match the computed frequency curve.

Peak discharge-drainage area relationships for Little Canteen Creek and Canteen Creek are shown in Table 1.

Although the drainage area for Canteen Creek at State Highway 157 is greater than the drainage area at State Highway 159, peak discharges at State Highway 157 are less because a significant amount of water goes into storage.

As the creek runs into the American Bottoms area, the grade becomes flatter, and water backs up behind structures.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of streams in the community were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each stream studied in the community.

Water-surface elevations of floods of the selected recurrence intervals for Little Canteen Creek and Canteen Creek were computed through use of the U.S. Army Corps of Engineers HEC-2 step-backwater computer program (Reference 8).

Cross sections for the backwater analyses of Little Canteen and Canteen Creeks were obtained by field surveys. All bridges and culverts were field checked to obtain elevation data and structural geometry. The location and extent of the cross sections were determined during field inspections by hydraulic engineers.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments

Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second) 10-Year	50-Year	100-Year	500-Year
Little Canteen Creek					
At State Highway 157	7.95	3,100	4,940	5,780	7,340
1500 Feet Upstream of Circle Drive	5.89	2,600	4,200	4,900	6,470
Canteen Creek					
At State Highway 157	22.6	4,300	7,000	8,400	11,000
At State Highway 159	20.1	4,500	7,100	8,600	11,100

for which a floodway is computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and based on field observations of the stream and flood plain areas. Roughness values for the stream channels ranged fromm 0.04 to 0.07, and overbank area roughness values ranged from 0.04 to 0.08.

Starting water-surface elevations for Little Canteen Creek and Canteen Creek were obtained using a normal-depth analysis.

Flood profiles were drawn showing water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals (Exhibit 1).

The Canteen Creek hydraulic analysis required special treatment below State Highway 157. There are levees along the channel from this point downstream. Peak flows of all floods studied, including the 10-year flood would spill over the channel just below State Highway 157 and run through the overbank area. When the floodwater spills over the channel bank, the water levels downstream in the overbank area are lower than the levels in the channel at the same location. Profiles were computed and drawn for both the channel and the overbank downstream of State Highway 157.

The channel capacity for the stream segment between State Highways 40 and 157 was determined for each frequency flood. This capacity was then subtracted from the total peak flow and the remainder was used to compute water-surface profiles in the overbank area. The HEC-2 computer program was used for this analysis (Reference 8).

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Hydraulic analyses also provided estimates of the elevations of the 100-year flood for those areas subject to shallow flooding.

Peak volume values for the 100-year flood for the areas subject to shallow flooding conditions were developed by hydrologic basin modeling, using the computer program HEC-1 Flood Hydrography Package (Reference 4). The computer program uses rainfall frequency amounts obtained from U.S. National Weather Service Technical Paper Nos. 40 and 49 (Reference 5), optimized unit hydrographs, and storage routing.

Cross section data for the drainage courses were obtained from topographic maps derived from aerial photographs (Reference 9). Using this topographic data, the capacity of the drainage courses and depressions in the community was determined. The volume of the 100-year flood that would be ponded in the low areas and the corresponding maximum ponding elevation in each area were then determined.

To consider the effects of Harding Ditch on the shallow flooding areas, the capacity of the ditch was obtained using the height of the levees as the bank. It was determined that during a 100-year flood, the elevation of water in the ditch will be higher than the levee in some areas and will overtop it. The amount of water that will overtop the levee was then added to the amount of water already determined for the ponding areas and a new elevation was computed.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in the study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage State and local governments to adopt sound flood plain management programs. Each Flood Insurance Study, therefore, includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the Federal Insurance Administration as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:4,800 with a contour interval of 2 feet (Reference 9), and at a scale of 1:24,000, enlarged to 1:4,800, with a contour interval of 10 feet (Reference 10).

In cases where the 100- and 500-year flood boundaries are close together, only the 100-year flood boundary has been shown.

The boundaries of the 100-year flood have been delineated in all low areas of any consequence, using the computed ponding elevations, on topographic maps at a scale of 1:4800 with a contour interval of 2 feet (Reference 9).

Flood boundaries for the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 2).

Small areas within the flood boundaries may lie above the flood elevations and, therefore, not be subject to flooding; owing to limitations of the map scale, such areas are not shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity and increases flood heights, thus increasing flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment in order that the 100-year flood be carried without substantial increases in flood heights. As minimum standards, the Federal Insurance Administration limits such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. As the State of Illinois regulations provide for only an insignificant increase in flood heights, 0.1 foot was used in this study.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. However, when there is insufficient conveyance in one of the overbank areas, the computer program automatically tries to reduce the conveyance on the overbank area to make up the deficit.

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood boundaries are close together, only the floodway boundary has been shown.

The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 0.1 foot at any point. Typical relationships

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Little Canteen Creek								
A	350	1,050/1,030[2]	2,447	2.4	427.2	427.2	427.3	0.1
B	4,550	908	1,239	4.7	439.4	439.4	439.5	0.1
C	4,710	880	2,576	2.2	442.8	442.8	442.8	0.0
D	5,085	250	1,165	5.0	445.3	445.3	445.3	0.0
E	5,955	125	989	5.8	447.1	447.1	447.1	0.0
F	6,335	150	517	11.2	447.9	447.9	447.9	0.0
G	6,775	202	1,215	4.8	452.0	452.0	452.0	0.0
H	8,502	280/150[2]	2,281	2.0	456.0	456.0	456.1	0.1
I	12,801	296/65[2]	931	4.9	468.4	468.4	468.5	0.1
J	13,971	310/95[2]	1,474	3.1	471.3	471.3	471.4	0.1

[1]Feet Above Mouth [2]Width/Width Within Corporate Limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

VILLAGE OF CASEYVILLE, IL
(ST. CLAIR CO.)

FLOODWAY DATA

LITTLE CANTEEN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Canteen Creek								
D	19,642	354	1,173	7.2	437.0	437.0	437.1	0.1
E	19,906	94	1,282	6.6	439.1	439.1	439.1	0.0
F	20,011	855/170[2]	2,368	3.5	440.8	440.8	440.8	0.0
G	24,288	581/185[2]	3,312	2.6	447.5	447.5	447.6	0.1
Canteen Creek (overbank flow)								
A	13,464	3,371[3]	2,237	2.5	422.9	422.9	423.0	0.1
B	16,632	2,473[3]	2,025	2.8	429.1	429.1	429.2	0.1
C	18,850	1,050/950[2]	1,675	3.4	434.9	434.9	435.0	0.1

[1]Feet Above Mouth [2]Width/Width Within Corporate Limits [3]Floodway Lies Entirely Outside Corporate Limits

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

VILLAGE OF CASEYVILLE, IL
(ST. CLAIR CO.)

FLOODWAY DATA

CANTEEN CREEK-CANTEEN CREEK (OVERBANK FLOW)

between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

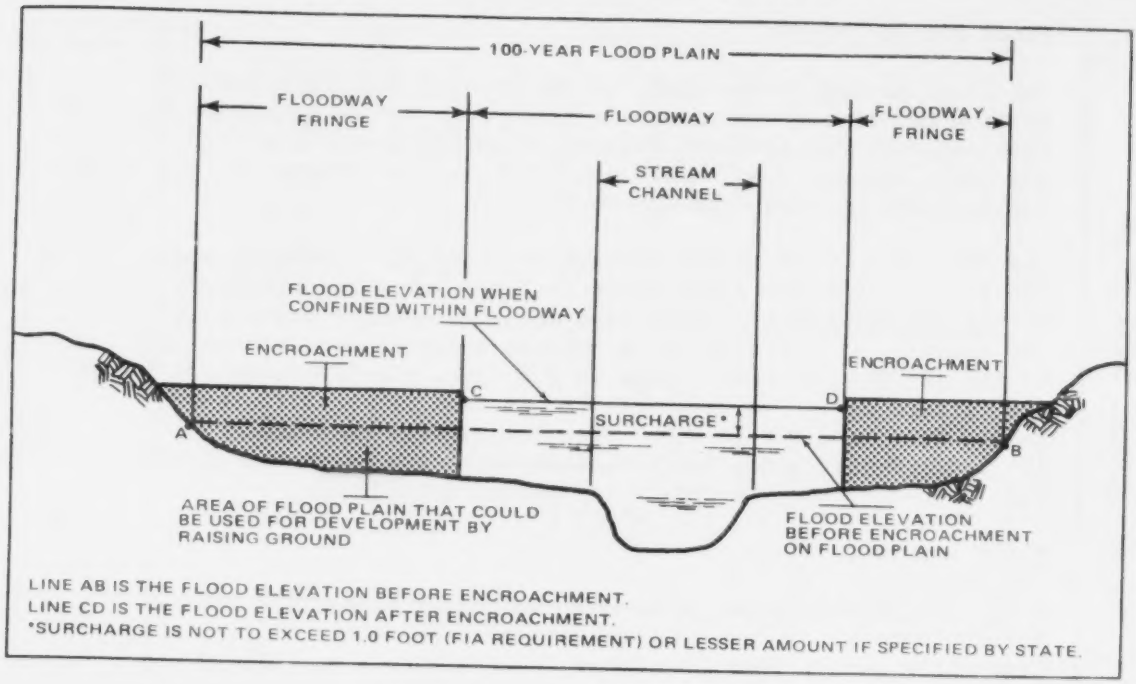
100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
A
B
SURCHARGE*
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT.
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT.
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

Figure 2. Floodway Schematic

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the Federal Insurance Administration has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail affecting Caseyville.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach:

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of Caseyville are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is the Federal Insurance Administration device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHF are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest one-half foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective Flood Hazard Factors, the entire incorporated area of the Village of Caseyville was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or Flood Hazard Factors determined.
Zone AH:	Special Flood Hazard Areas inundated by types of 100-year shallow flooding where depths are between 1.0 and 3.0 feet; base flood elevations are shown, but no Flood Hazard Factors are determined.
Zones A1, A2, A4, A5, and A8:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to Flood Hazard Factors.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood, including areas of the 500-year

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Little Canteen Creek							
Reach 1	0002	-1.2	-0.3	0.4	010	A2	Varies - See Map
Reach 2	0002	-3.9	-0.8	1.3	040	A8	Varies - See Map
Reach 3	0002	-1.8	-0.5	0.8	020	A4	Varies - See Map
Canteen Creek							
Reach 1	0002	-0.0	-0.0	0.0	005	A1	Varies - See Map
Reach 2	0002	-1.8	-0.5	1.6	020	A4	Varies - See Map
Reach 3	0002	-2.7	-0.8	1.0	025	A5	Varies - See Map
Canteen Creek (overbank flow)							
Reach 1	0002	-0.8	-0.2	0.3	010	A2	Varies - See Map
Ponding	0001,0002 0003	N/A	N/A	N/A	N/A	AH	Varies - See Map

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

VILLAGE OF CASEYVILLE, IL
(ST. CLAIR CO.)

FLOOD INSURANCE ZONE DATA

LITTLE CANTEEN CREEK-CANTEEN CREEK-CANTEEN CREEK (OVERBANK FLOW)-PONDING

flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

The flood elevation differences, Flood Hazard Factors, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community are summarized in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Caseyville is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the Federal Insurance Administration.

6.0 OTHER STUDIES

Flood Insurance Studies are being conducted for the Illinois communities of Washington Park (Reference 11), Fairmont City (Reference 12), Collinsville (Reference 13), and for the unincorporated area of St. Clair County, Illinois (Reference 14). The results of this study will be in agreement with the results of those studies.

Because this Flood Insurance Study is a more detailed analysis, it supersedes the previously published Flood Hazard Boundary Map issued by the Federal Insurance Adminstration (Reference 15).

This study is authoritative for the purposes of the National Flood Insurance Program; data presented herein either supersede or are compatible with all previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the Insurance and Mitigation Division, Federal Emergency Management Agency, 1 North Dearborn Street, Chicago, Illinois 60602.

8.0 BIBLIOGRAPHY AND REFERENCES

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13. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, City of Collinsville, Illinois, January 1981

14. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, St. Clair County, Illinois, unpublished

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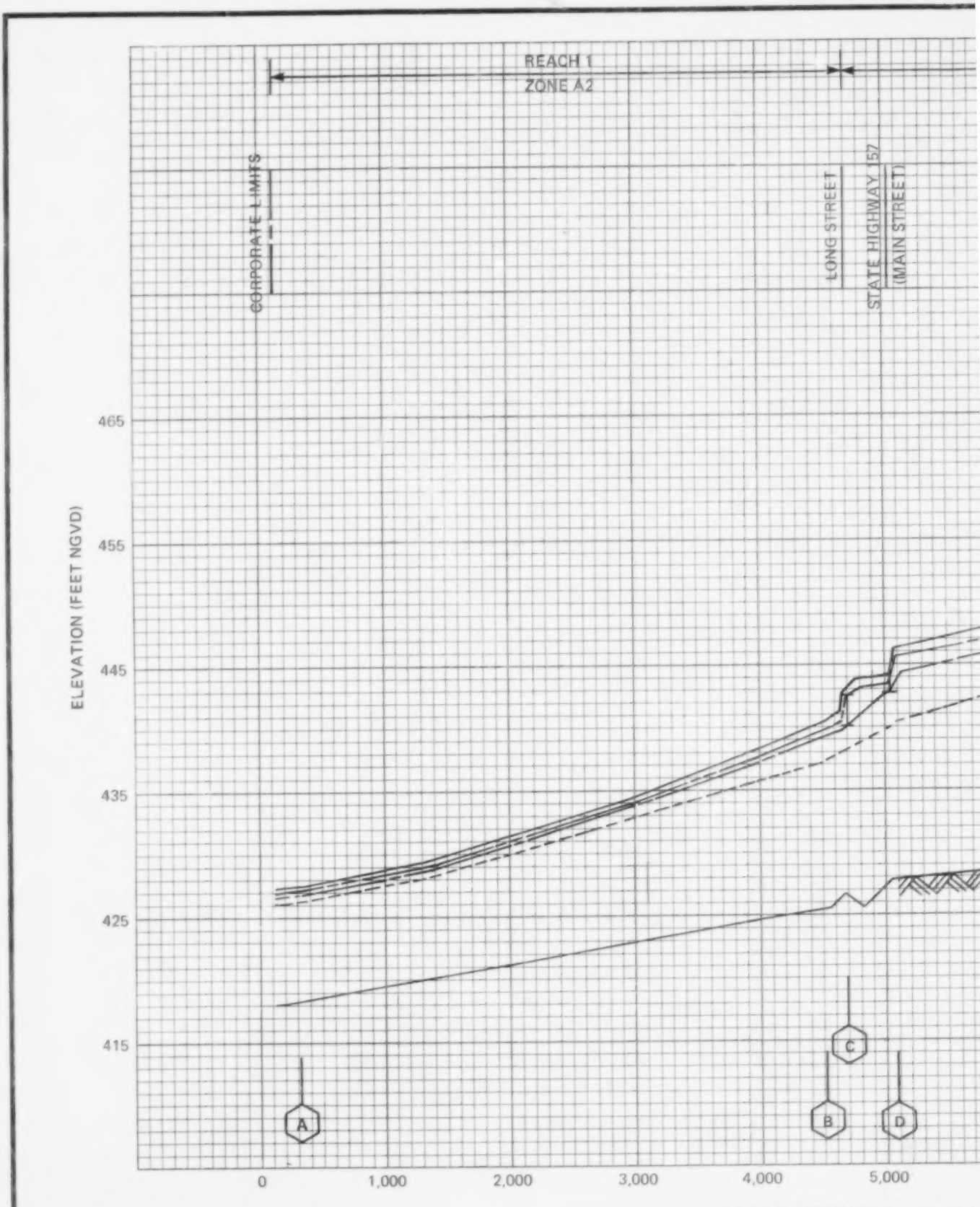
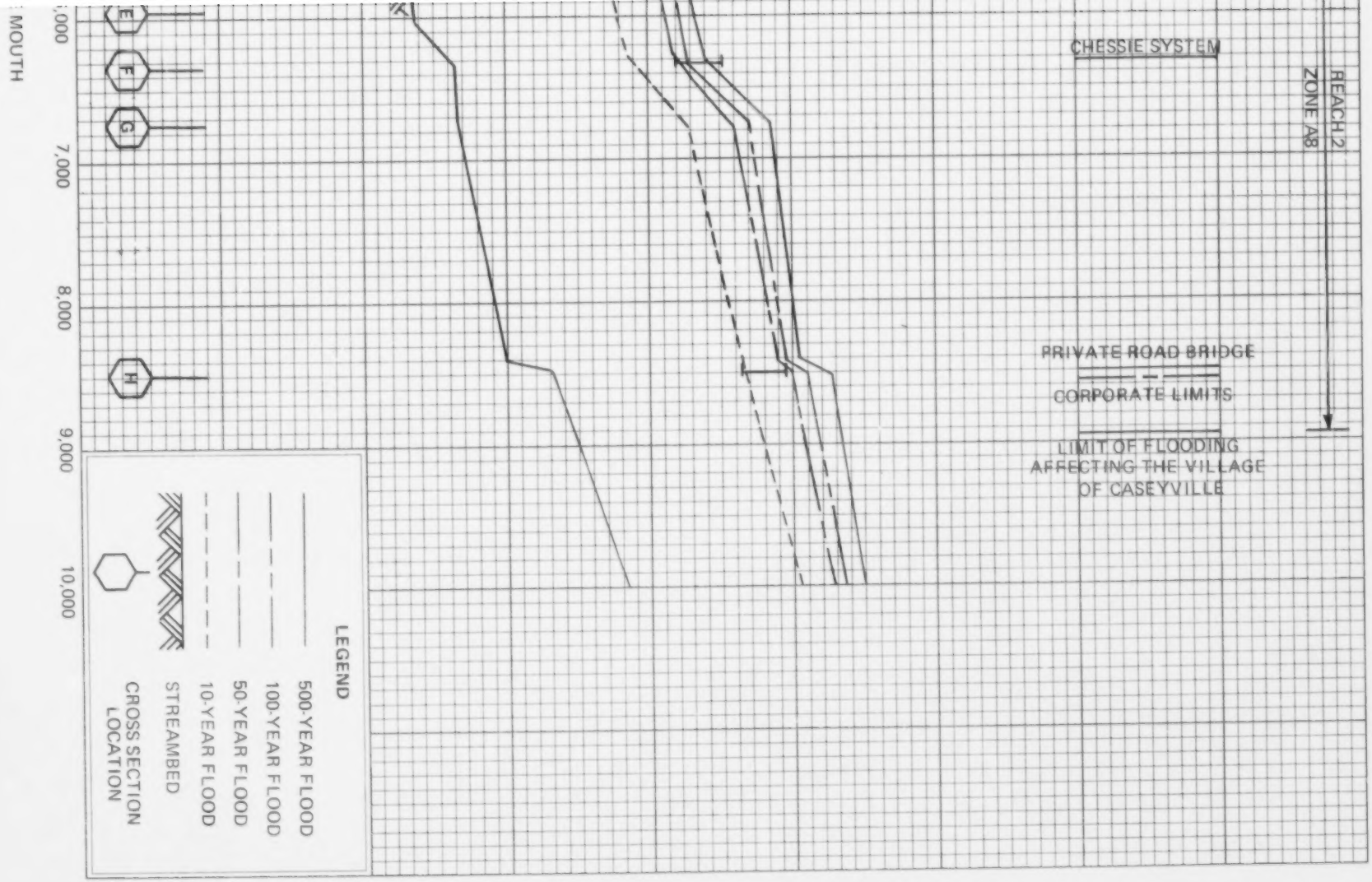

REACH 1
ZONE A2
CORPORATE LIMITS
LONG STREET
STATE HIGHWAY 57
(MAIN STREET)
ELEVATION (FEET NGVD)
465
455
445
435
425
415
A
B
C
D
0
1,000
2,000
3,000
4,000
5,000
STREAM DISTANCE IN FEET ABO



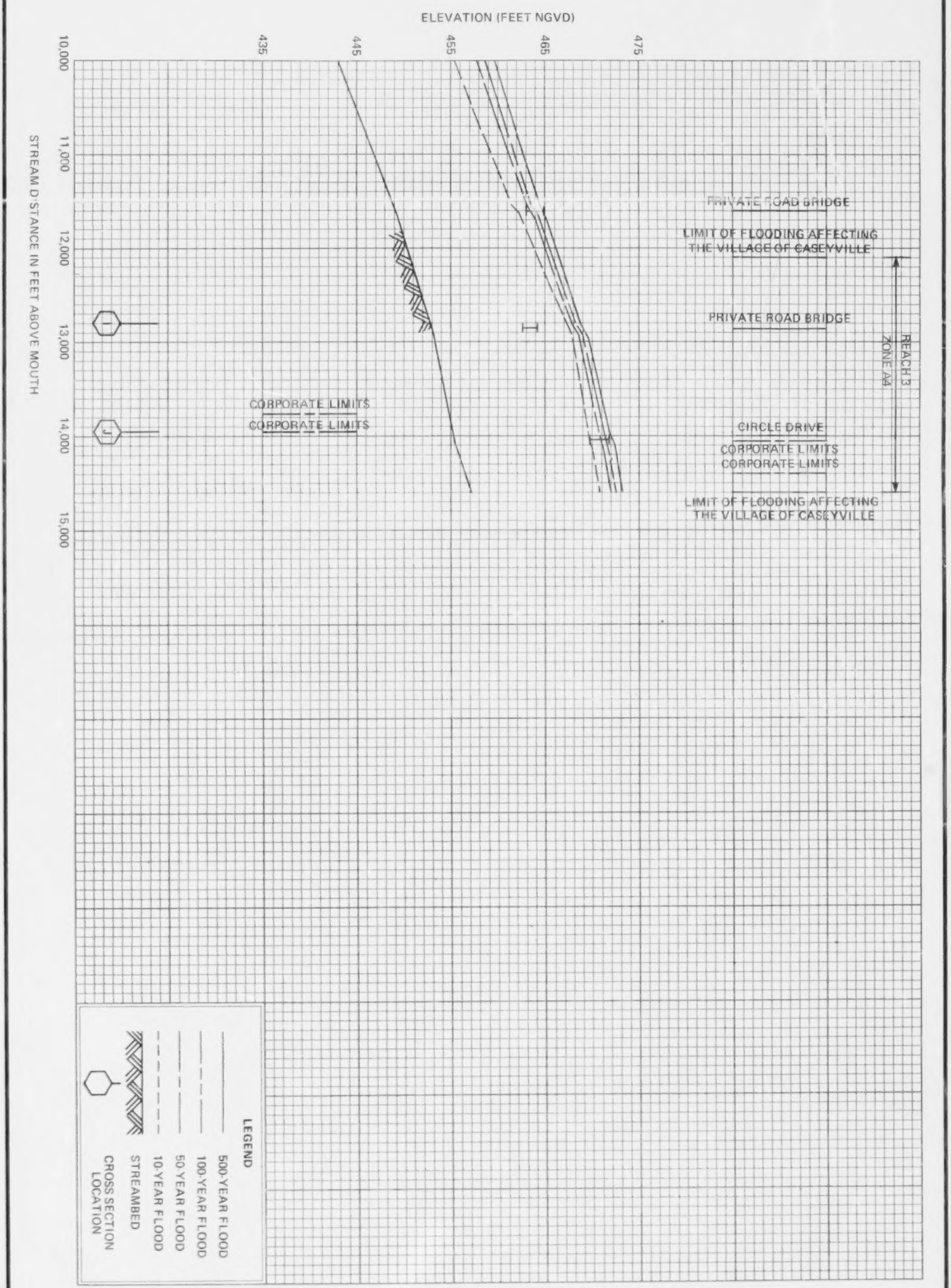
01P

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

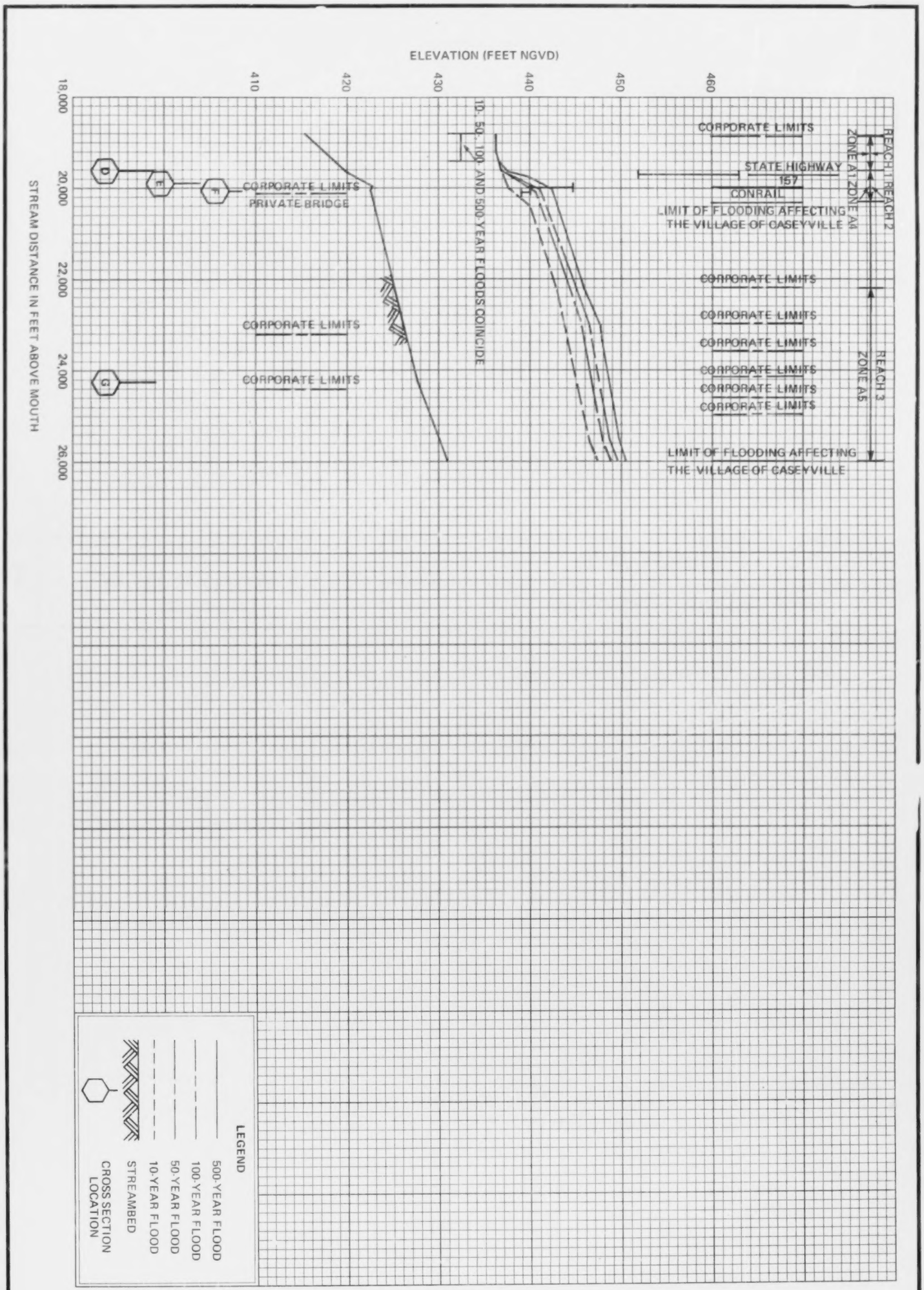
VILLAGE OF CASEYVILLE, IL
(ST. CLAIR CO.)

FLOOD PROFILES

LITTLE CANTEEN CREEK



02P	FEDERAL EMERGENCY MANAGEMENT AGENCY Federal Insurance Administration **VILLAGE OF CASEYVILLE, IL** (ST. CLAIR CO.)	**FLOOD PROFILES** **LITTLE CANTEEN CREEK**



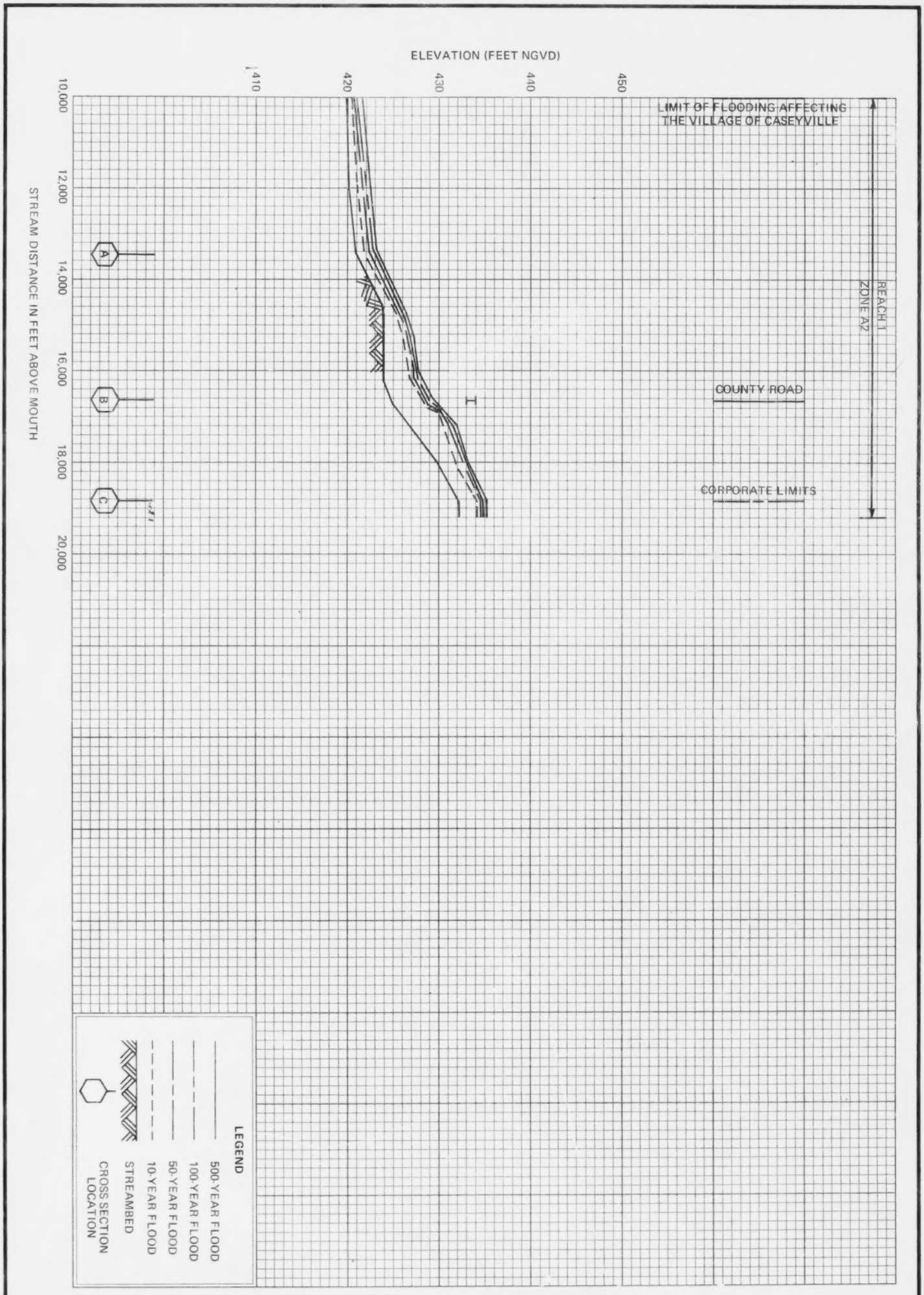
03P

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

VILLAGE OF CASEYVILLE, IL
(ST. CLAIR CO.)

FLOOD PROFILES

CANTEEN CREEK



04P

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

VILLAGE OF CASEYVILLE, IL
(ST. CLAIR CO.)

FLOOD PROFILES

CANTEEN CREEK (OVERBANK FLOW)